

What is claimed is:

- 1 1. A fabrication device for use during the grinding operation of a product wafer  
2 having a first surface on which a plurality of conductive bumps are formed in a  
3 predetermined pattern and a second surface to which a grinding force is to be applied,  
4 said fabrication device comprising:
  - 5 a. a socket plate having first and second surfaces; and
  - 6 b. a plurality of cavities formed in said first surface of said socket plate that  
7 are arranged in the predetermined pattern and correspond in number with the plurality of  
8 conductive bumps formed on said first surface of said product plate.
- 1 2. The fabrication device according to claim 1, wherein said plurality of cavities are  
2 defined by holes formed entirely through said socket plate.
- 1 3. The fabrication device according to claim 1, wherein said plurality of cavities are  
2 defined by blind holes formed in said first surface of said socket plate.
- 1 4. The fabrication device of claim 1, wherein said socket plate is composed of a  
2 metal plate.
- 3 5. The fabrication device of claim 4, wherein said metal plate is composed of  
4 Molybdenum.
- 1 6. The fabrication device according to claim 1, wherein said conductive bumps are  
2 of a predetermined height in the range of 50 – 100 um, and of a predetermined diameter  
3 in the range of 60 – 120 um in diameter, and said plurality of cavities are of a height in  
4 the range of 80 – 130 um, and of a predetermined diameter in the range of 90 – 150 um  
5 in diameter.

1 7. A method for thinning a product wafer having a first surface on which a plurality  
2 of conductive bumps are formed in a predetermined pattern and a second surface to  
3 which a grinding force is to be applied to effect the thinning, said method comprising the  
4 steps of:

- 5 a. providing a socket plate having first and second surfaces and a plurality of  
6 cavities formed in said first surface thereof that are arranged in the predetermined pattern  
7 and correspond in number with the plurality of conductive bumps formed on said first  
8 surface of said product wafer;
- 9 b. placing said product wafer in registry with said socket plate by inserting  
10 said plurality of conductive bumps in corresponding ones of said plurality of cavities; and
- 11 c. applying a grinding force to said second surface of said product wafer.

1 8. The method for thinning a product wafer according to claim 7, further comprising  
2 the step of placing said socket plate on a vacuum chuck prior to placing said product  
3 wafer in registry with said socket plate.

1 9. The method for thinning a product wafer according to claim 7, wherein said  
2 plurality of cavities are defined by holes formed entirely through said socket plate.

1 10. The method for thinning a product wafer according to claim 7, wherein said  
2 plurality of cavities are defined by blind holes formed in said first surface of said socket  
3 plate.

- 1 11. A system for performing the grinding operation in a wafer fabrication process,  
2 comprising:
- 3 a. a product wafer having first and second surfaces and a plurality of  
4 conductive bumps formed on said first surface and arranged in a predetermined pattern;  
5 and
- 6 b. a socket plate having first and second surfaces and a plurality of cavities  
7 formed in said first surface thereof arranged in said predetermined pattern and  
8 corresponding in number with the number of said plurality of conductive bumps.
- 1 12. The system for performing the grinding operation in a wafer fabrication process  
2 according to claim 11, wherein said plurality of cavities are defined by holes formed  
3 entirely through said socket plate.
- 1 13. The fabrication device according to claim 11, wherein said plurality of cavities  
2 are defined by blind holes formed in said first surface of said socket plate.
- 1 14. The fabrication device of claim 11, wherein said socket plate is composed of a  
2 metal plate.
- 1 15. The fabrication device of claim 14, wherein said metal plate is composed of  
2 Molybdenum.
- 1 16. The fabrication device according to claim 11, wherein said conductive bumps are  
2 of a predetermined height in the range of 50 – 100 um, and of a predetermined diameter  
3 in the range of 60 – 120 um in diameter, and said plurality of cavities are of a height in  
4 the range of 80 – 130 um, and of a predetermined diameter in the range of 90 – 150 um  
5 in diameter.

- 1 17. A method for forming a socket wafer that is used in a process for thinning a  
2 product wafer that includes a first surface on which a plurality of conductive bumps are  
3 arranged in a predetermined pattern determined by a first mask, comprising the steps of:
- 4 a. providing a plate of predetermined material having first and second  
5 opposing surfaces;
  - 6 b. coating said first surface of said plate with a CVD (chemical vapor  
7 deposition) oxide layer with a positive resist material;
  - 8 c. flipping said first mask from its orientation used to create said conductive  
9 bumps and placing it on said first surface of said plate in covering relation to said resist  
10 material;
  - 11 d. removing said resist material that is exposed through said first mask;
  - 12 e. removing said first mask from said plate;
  - 13 f. etching said CVD oxide layer using said resist material as a second mask  
14 to form a plurality of cavities in said plate; and
  - 15 g. removing the remainder of said resist material.
- 1 18. The method according to claim 17, wherein said plurality of cavities are defined  
2 by holes formed entirely through said socket plate.
- 1 19. The method according to claim 17, wherein said plurality of cavities are defined  
2 by blind holes formed in said first surface of said plate.
- 1 20. The method according to claim 17, wherein said plate is composed of a  
2 predetermined metal.

1 21. The method according to claim 20, wherein said metal plate is composed of

2 Molybdenum.

1 22. The method according to claim 17, wherein said conductive bumps are of a

2 predetermined height in the range of 50 – 100  $\mu\text{m}$ , and of a predetermined diameter in the

3 range of 60 – 120  $\mu\text{m}$  in diameter, and said plurality of cavities are of a height in the

4 range of 80 – 130  $\mu\text{m}$ , and of a predetermined diameter in the range of 90 – 150  $\mu\text{m}$  in

5 diameter.